

AUTOMATIC DIALING SYSTEM

This application is a continuation of application Ser. No. 07/496,038, filed 20 Mar. 1990 now abandoned. 5

FIELD OF THE INVENTION

The invention relates to a credit card size micro-processor operated telephone dialer/credit card.

BACKGROUND AND DISCUSSION OF THE INVENTION

To place long distance telephone calls often the telephone dialer must either reverse the charges or recall a charge number for inputting into the telephone system. Particularly for those who make a number of telephone calls, recalling these numbers can be a difficult process. Where a list of numbers is kept at a separate location the user, particularly when travelling, must locate and retrieve the appropriate number, not always an easy task.

In some airports and other high credit card use areas a few magnetic card reader type phones have been installed. Because so few of these phones exist, more than often a credit card caller must either wait in line for this special phone or he/she is forced to manually dial in the credit card number by way of the keypad on a standard phone set. The magnetic card reader phone is not practical for hotel rooms and many other general locations and therefore are never found in these desirable locations.

Although memory dialer systems have been developed, these have been deficient for a number of reasons. The existing units are bulky and require some knowledge of programming to be properly utilized. As a result of their large size and complications encountered in programming, few find it convenient to carry and utilize the existing remote dialers. In many cases the individuals would rather not go through the inconvenience of locating the magnetic credit card reader phones, waiting for these special phones, or the tedious task of manually dialing an access code and credit card number. Many current remote dialers will not consecutively dial the long series of access numbers required for the long distance service systems.

Often such systems do not accommodate the time delay properly incurred between the dialing of the telephone number and the tone for dialing in the charge number. Those systems which rely simply on a programmable delay do not adjust for a significant delay or 50 pauses due to problems in the communication system or other defects. Under these circumstances the automatic dialer is inoperative, if the actual pause is greater than that programmed.

Other automatic dialers that exist in office telephones or other so-called portable systems are not small enough or sufficiently easy to use to make them as appealing as they should be to the public. Both the size and operation of automatic telephone dialer systems of the past have created impediments to their widespread use.

The invention described therein includes the utilization of the present phone system, almost any phone, to automatically enter one's phone system credit card number. The user would no longer need to hunt for special magnetic card reading phones. Rather the user can enjoy the same ease of operation with the phone in his hotel room, client's office, or basically any phone. The credit card number will be entered to the phone

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system correctly each time, thus avoiding the tedious task of manually dialing the requisite code. One embodiment of the invention will not require any user programming. The user can receive his/her card completely pre-programmed.

Certain advantages of the invention include ease of dialing a telephone number using a charge card to input the number through the receiver of the telephone or through insertion into the charge card slot provided on certain telephones. The card has the ability to store a large number of numbers which can be retrieved as desired or dialed in sequence. This permits the user to recall numbers that he otherwise would not use because of the inability to locate the number. Where a sequence of numbers is to be dialed, the invention provides this feature as well.

Another advantage of the invention is the elimination of concurrent unauthorized use since the card can be designed without a visible number that can be readily copied. In this way the user can be ensured that while using the card no other third party can have access to his charge number. Because the number is not written elsewhere, there is no fear of losing the number so that it falls into the wrong hands and is used without permission. Should the "Universal Credit Card" be lost or stolen, the owner simply reports such and the access number would be made inactive by the appropriate company, or in the case that the user is using a PIN number, the card is inoperative. Essentially the card could be lost or stolen without the fear of fraudulent use. Industry-wide use would all but eliminate credit card fraud, currently in excess of 1.4 billion dollars.

One of the most important advantages of the invention is its size. The invention would resemble the size of an average credit card and fit in a credit card pouch of a wallet. The average person carries between three to twenty credit cards, and the invention is in this same format size. Due to the wide acceptance of the credit card the size of the invention would be readily accepted and have a place in everyone's wallet.

There are also advantages to the public phone system in that the invention will eliminate misdialings of the credit card numbers, reduce phone fraud, expedite access time, utilize more of the existing phone equipment, and eliminate the expenditure on magnetic card reading phones, ultimately reducing the cost to the consumer for phone service.

The system also reduces the delay often experienced in accessing the telephone. It eliminates wrong numbers, misdialings, wrong charge numbers and other such delays which often frustrate the use of public telephone systems.

This invention could also be used instead of the generic bank credit card or any credit card for that matter. Essentially the "Universal Credit Card" could be used for anything that the current credit cards are used for, while providing greater security to the credit card industry. The retailer or merchant can be assured that the person placing the order is authorized to use the charge card and not just ordering from a number that has been copied down, carbon copies with someone's number imprinted out or a lost or stolen card. The way the current system works, a person willing to commit credit card fraud could so for fifty-nine (59) days or more. Not until the owner recognized a dispute in his/her charges in a statement, would that person know someone was making illegal charges to their account. The merchant, the consumer, the industry, and general public all bear

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this unnecessary added expense. Should the invention become the industry standard it would all but eliminate credit card fraud.

The "Universal Credit Card" will greatly simplify the credit card industry through both consolidation of the multiple cards and eliminating credit card fraud. A bank card company (i.e. Visa, Master Card), gas company, phone company, etc. will simply notify the individual his/her credit has been approved along the "Ultimate Credit Card". The owner then enters the information into the card via the keypad or the data bus. To use the card to charge, the owner must first input his personal identification number (PIN number).

One apparatus for achieving these goals is a credit card size unit having a memory, encoder, speaker, microphone and switch. In utilizing the invention as a phone card, depending on which carrier, the card is used to access an account or gain access to a phone system. The invention accesses the account via tones or signals fed through the receiver (microphone) or direct data input via a small data bus on the card. The data bus can also be used for inputting and outputting information to and from the device, and if applicable, in conjunction with the infrared source and detector.

A second apparatus for achieving these goals includes a credit card size microprocessor unit having a keypad, a microprocessor memory, an encoder, a speaking unit, a microphone as well as an alphanumeric display. The keypad permits the user to input the desired numbers, and to provide serial dialing to input new numbers and to identify the numbers as belonging to particular sources. Unlike other systems the processor is connected to a microphone and an output speaker such that the account number is not input to the telephone until the appropriate dial tone signal has been sensed by the microphone. This avoids the inefficiencies of programming a time delay as utilized in other systems. Each number that is being dialed is displayed so that the user can be sure that the correct number is being dialed in the telephone. The invention can also have a connection to an external system for inputting and outputting data to and from another source if that is desired. Typically the external bus is used for conventional credit card use (i.e. bank card), and if applicable in conjunction with a infrared source and detector.

In the two aforementioned apparatus, the microphone, speaker, and encoder may or may not be part of the design depending on the intended use of the device (i.e. the phone dialing circuitry could be eliminated in the event the manufacturer does not desire to utilize phone related capabilities).

The above has been a brief description of deficiencies in the prior art and features of the invention. Other features of the invention will become apparent to those skilled in the art from the Detailed Discussion of the Preferred Embodiment which follows.

BRIEF DESCRIPTION OF THE INVENTION

FIG. 1 is a schematic of the dialer/credit card of the invention.

FIG. 2 shows one side of the dialer/credit card with the keypad and display.

FIG. 3 is the reverse side of the credit card as shown in FIG. 2, the side with the speaker and microphone.

FIG. 4 is a schematic of the "Universal Credit Card", the invention.

FIG. 5 is a second schematic of the "Universal Credit Card".

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5 FIG. 8 shows the reverse side of the "Universal Credit Card".

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With reference to FIG. 2, the front of the card, there is shown a display and a keypad with function keys and decimal numbers 30. In this manner the speaker and microphone can be placed against the mouthpiece of the telephone, once the appropriate number has been selected. In another embodiment the card can have the speaker 18a and microphone 16c located on the same side of the card with the keypad and display.

65 Once the data has been properly input into the system, it can be used in the following manner. The user presses the sequence key until the desired data is displayed on display 14C. This is the data that will be input

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to the system once operated properly. In utilizing the device as a phone card, the card's speaker is placed over the mouthpiece of the receiver and the user then presses the direct long distance dial key, if it is a long distance number. After a programmed delay period the number will be dialed using the tones according to a touch tone system. Once the number is completed the system will stop until the appropriate tone which identifies the need for the account number is sensed by microphone 16c. Once the tone is sensed, the speaker 18a will then be actuated to input the account number using the touch tone system.

Where a number of numbers are to be dialed until a connection is made, the sequence key 42 can be operated. In this system the sequence key is initially pressed and the card will automatically seek the next set of data. If no data is stored in a particular block, the sequence addressing step will move to the next block of data until a number is located. At this point the operation of the program will stop until a direct call is dialed or the sequence key is again pressed. Dialing would be accomplished again as discussed above. Similarly, rather than automatically sequencing, the user can scroll to the desired number by pressing the scroll key 46 and 56.

To change a number or an identification the processor is operated to arrive at a particular data location. This data is cleared by actuating clear key 36 and a new identification number and telephone number is input using the decimal keys 30. Once the desired number has been input the enter key is hit to place it in memory.

With scroll keys 46 and 56 the user can input the identification numbers, actuating the scroll keys until the data corresponding to the identification number is found.

As can be seen by FIG. 4, another embodiment of the apparatus includes switch 60 that activates the microprocessor with memory 62 that in turn outputs to speaker 58. The microprocessor 62 is connected to an input/output bus 64. In utilizing this device as a phone card, after the card has been preprogrammed, the user can place the speaker 58 over the receiver and press switch 60 activating the microprocessor outputting to the speaker 58. The speaker emits the touch tone frequencies corresponding to the user's account number thus allowing access to the phone system or completing the dialing procedure. The input/output bus 64 could be used for programming the card or outputting information directly to a phone system, cash register, or computer.

As seen in FIG. 5, the apparatus consists of a switch 80 connected to a clock 81 and a shift register 82 that outputs via databus 83 to the encoder 87 that in turn outputs to speaker 88. In this way after the card has been preprogrammed the user can place the speaker 88 over the receiver and press switch 80 activating the clock and shift register outputting to the encoder 87 in turn outputting to the speaker 88, or place the card on the receiver and when the credit card request tone is sensed by the microphone 86 the input/output circuitry 84 activating the clock 81 and shift register 82 outputting to the encoder 87 in turn outputting to the speaker 88. The speaker emits touch tone frequencies corresponding to the user's account number thus allowing access to the phone system or completing the dialing procedure. The input/output bus 84 could be used for programming the card or outputting information directly to the phone system, cash register, or computer.

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The actual size of the device to house the elements discussed above is shown in FIGS. 6, 7 and 8. The card 90 as shown has a typical credit card configuration with the logo and other information on front 92. The near side 93 includes the microphone and speaker that can be made small enough not to significantly interfere with the thickness as shown. These elements can be embedded in the card and the circuit board to reduce the amount of space required.

The above has been a detailed discussion of the preferred embodiment of the invention. The full scope of invention to which Applicant is entitled is defined in the claims which follow and their equivalents. The specification should not be interpreted to unduly narrow the scope of invention to which Applicant is otherwise entitled.

What is claimed is:

1. An electronic credit card and direct dialing device comprising:
 - a case of a size and shape to fit in the user's wallet corresponding to the size of a credit card and to be held in hand during use or inserted into a corresponding input device;
 - a keyboard on said device comprising alphanumeric keys for numerals 0 to 9 and letters A to Z and function keys;
 - alphanumeric display means in said case with a capacity for displaying a plurality of telephone numbers, credit card numbers and other data;
 - read-write memory circuit means in said case for storing and retrieving data items comprising selected ones of said credit card numbers, said telephone numbers, and identification, said memory circuit having a capacity for storing a plurality of data items under a multiplicity of identification names as memory addresses;
 - said storing means controlled by said alphanumeric keys and functions keys for feeding to said memory circuit means said data items including said selected ones of said telephone numbers, said credit card numbers, and said identification to be stored and for identifying the names under which said items are to be stored;
 - retrieving means controlled by said alphanumeric keys and said functions keys for retrieving said data items stored by said memory circuit means including means for designating the name under which the desired data items are stored and for displaying by display means said name and said data items stored under the designated name; and
 - means for imparting a first audio signal identified by a telephone for dialing one of said telephone numbers;
 - means for sensing a dial tone and request tones from said telephone, said means for sensing capable of sensing said dial tone and request tones from an earpiece of said telephone when said device is located at a mouthpiece of said telephone; and
 - means for automatically actuating said means for imparting a second audio signal corresponding to a charge number upon sensing said dial tone from said telephone, said second audio signal being imparted to said telephone to complete a call.
2. The device according to claim 1 wherein said retrieving means comprises retrieving a name by inputting a mnemonic address of said name by said keyboard and means for sequencing from one name to another when

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